We stern Electric Co., Incorporated, Engineering Dept., New York. (4 Pages) Page #1. Issue 1 - BT-438465. February 20, 1920.

METHOD OF OPERATION
TELEPHONE CIRCUIT

With Single Ended Cord - For Listening And Monitoring - With Repeating Coll Monitoring Feature - Arranged For Machine Ringing And - For Dialing Full Mechanical Office - Special Chief Operator's Desk.

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THE SOUTHWESTERN TELEPHONE AND TELEGRAPH COMPANY
MAIN OFFICE. KANSAS CITY. MISSOURI.

GENERAL DESCRIPTION

- 1. This circuit is used at a special chief operator's desk to provide the desk operator with a means of communicating with subscribers and other operators. It is arranged for repeating coil monitoring, listening, and dialing, and for cutting off ringing current automatically when machine ringing is used. It is equipped with a ringing key and with a flashing key. It is also provided with an operator's set and a desk stand so arranged that the operator's set may be used alone or the head receiver may be used with the desk stand transmitter.
- 2. When the plug of this circuit is inserted in a monitoring jack, the operator can monitor on the connection with all keys normal. If the trunk, talking or holding key is operated at this time, the telephone set is automatically disconnected from the monitoring circuit. To make a call over a ring down trunk, the plug of this circuit is inserted in the trunk jack and the ringing key operated. The telephone set is bridged across the trunk by the operation of the talking key. If the call is made over an automatic trunk, the talking key is operated and the desired number dialed. In the case of a ringdown tie trunk, the talking and ringing keys are both operated.

DETAILED DESCRIPTION

OPERATION

3. When a call over a key ended trunk is answered, the talking key associated with the lighted trunk lamp is operated bridging the B75 relay across the trunk in series with the winding of the #54-D retardation coil and shunted by the other winding, thereby tripoing machine ringing. The B75 relay operates, closing a circuit through the E249 relay and the special #178 relay per D-10866. At this time the E249 relay being the reverse of the special #178 relay in that it is quick to operate and slow to release, operates, disconnecting the winding of the E106 relay from its break contact. When the special #178-relay operates, the E249 relay releases and the circuit is closed to operate the E106 relay in series with the E179 relay. The E179 relay operated disconnects generator and ground from the leads of the ringing key associated with the cord, while the El06 relay operated disconnects the receiver from the #27 repeating coil and connects it to the #24 induction coil. The circuit is arranged in this way so that the interval between the operation of the key and the operation of the E106 relay which bridges the telephone set across the tip and ring of the trunk is sufficient to prevent a flow of ringing current in the receiver. The B75 relay releases quickly preventing a subsequent flow of ringing current in the receiver should the distant operator momentarily disconnect. If the trunk key is operated to the holding position, the telephone set is disconnected from the trunk and a retardation coil is bridged across, preventing the distant cord supervisory lamp from lighting. When the holding key is operated, the Ell relay operates disconnecting the monitoring circuit from the telephone set. Should

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the call be incoming over a tie line, the B75 relay and #54-D retardation coil are not bridged across the trunk, but ground is applied to operate the E106. relay in series with the E179 relay by the operation of the talking key. When the flashing key is operated, the E247 relay operates, opening the ring side of the trunk and holding the E106 relay operated. The B75 relay and the #54-D retardation coil are disconnected from across the tip and ring of trunk, lighting the cord supervisory lamp. This cycle of operation reduces the click produced in the receiver when the circuit through the B75 and #54-D retardation coil is opened. When the flashing key is restored, the above cycle is reversed, releasing the E247 relay and closing the ring side of the trunk. The E247 relay is rather slow in releasing to prevent the ring side from being closed before the B75 relay and #54-D retardation coil are bridged across the tip and ring of the trunk, thereby reducing the click in the receiver. When the talking key is restored, the called supervisory lamp at the distant end lights as a disconnect signal. र्वे राजा - अवस्था निर्देशक के विदेशकों है। स्टूबरिय के अपना के स्वयं के हो प्रतिकार से सुन्ति है

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- 4. To make a call over a ringdown trunk or tie line, the plug of this circuit is inserted in the trunk jack, or if the tie line is key ended, the talking key is operated. The ringing key is then operated, lighting the trunk lamp at the distant end. When the talking key is operated, the telephone set is bridged across the trunk. Should the call be to an automatic office instead of the ringing key being operated, the talking key is operated and the desired number is dialed.
- 5. When the #137 plug of the telephone set is inserted in either pair of telephone jacks, the special E24 relay per D-14054 operates in series with the transmitter and the orimary winding of the #24 induction coil. The operation of this relay disconnects the transmitter of the special #20-CM desk stand per D-12746 and connects in that of the telephone head set. The head receiver may be used in connection with the special #20-CM desk stand by inserting the #87 cord in the telephone jacks. nature and services services services and the services of the services of the services of the services services and the services of the servic

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Testing current

.0025 ampere.

CIRCUIT REQUIREMENTS

RELEASE NON-OPERATE OP ERATE Rather slowly in local Sp1.#178 circuit at 20 volts. per Testing current Testing current D-10866 .034 ampere. .047 ampere. Adjusting current Adjusting current .035 ampere. .044 ampere. In series with 350 **B75** ohms and one winding of the #54-D retardation coil when shunted by the other winding of the latter at 20 volts. Through relay: Through relay: Testing current Testing current . POSS - NOTE . . .0025 ampere. .0052 ampere. Adjusting current Adjusting current .0026 ampere. .0049 ampere. When applied to When applied to ring lead: ring lead: Testing current Testing current .018 ampere. .039 ampere. Adjusting current Adjusting current .019 ampere. .037 ampere. Testing current In local circuit Ell .010 ampere. at 20 volts. Adjusting current Testing current .011 ampere. .026 ampere. Adjusting current .024 amoere. Testing current In series with E179 E106 .020 ampere. relay at 20 volts. Adjusting current Testing current .021 ampere. .027 ampere. Adjusting current .026 ampere. In series with E106 E179 relay at 20 volts. Testing current Testing current .012 ampere. .022 ampere. Adjusting current Adjusting current .013 ampere. .021 ampere. Rather slowly at In local circuit at 28 volts.

E247

20 volts.

Testing current

.020 amperc. Adjusting current .019 ampere.

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CIRCUIT REQUIREMENTS NON-OPERATE OP ERATE Actor in April Rather slowly at Quickly in local E249 Annaire selle v 28 volts. circuit at 20 volts. A SHOREL NO. Testing current Testing current ENCETHE TOTAL .0025 amp. .018 ampere. adjusting current A A COLOR Adjusting current .0026 ampere. .017 ampere. 100 melinky out the second In series with the Sp1.E24 and the state of the state of the transmitter and per of the small the fire primary winding of D-14054 of the print are to the #24 induction LINES IN THE SERVE. coil at 20 volts. Annie - enterno Testing current Testing current Jerosalie orl .0038 ampere. .0053 ampere. + * 11 2 2 11 11 Adjusting current Adjusting current the stantage of the stantage o .004 ampere. .0050 ampere. di solla e e er lette-1 James Land Witness Ofthe a la Sedi Labor Janeste mismulae + do no bid. IN YEARS WATERNE BIERRY ENTIRE TO PRINCIPLE DELL ecilia to la an evenie miglatentes Version selvent water the Lio. ATTICLE ATTIC Inches wilter

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